

CLAIMS:

1. A projection system (1) for displaying image information, comprising:
an illumination system (3) for generating a light beam,
a scanning device (5,13,7,15) comprising a mirror (5,7) for scanning the light
beam to form an image on a screen (35), and
5 a scan angle enlarger (7,9) cooperating with the scanning device for enlarging
a scan angle of the polarized light beam,
characterized in that the scan angle enlarger comprises a reflective polarizer
(9), a quarter-wave plate (11) and a mirror (7) arranged to reflect the light beam at least once
between the reflective polarizer (9) and the mirror (7) via the quarter-wave plate.
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2. A projection system as claimed in claim 1, wherein the reflective polarizer (9)
comprises a first portion (91) and a second portion (92), wherein the axis of polarization of
the first portion is perpendicular to the axis of polarization of the second portion.
- 15 3. A projection system as claimed in claim 2, wherein the reflective polarizer (9)
comprises one or more third portions (94) positioned between the first and the second portion
(93, 95), wherein the axis of polarization of the one or more portions is perpendicular to a
direction of polarization of one or more respective reflected light beams received by the
respective one or more third portions from the mirror (7).
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4. A projection system as claimed in claim 1, wherein the orientation of the fast
axis of the quarter-wave plate (10) is directed at an angle of 45° to the axis of polarization
(P1) of the reflective polarizer (9).
- 25 5. A projection system as claimed in claim 1, wherein the orientation of the
reflective polarizer (9) and the orientation of the quarter-wave plate (11) are directed in a first
plane parallel to the first and the second axis, the second axis being perpendicular to the first
axis, and wherein the orientation of the mirror (7) is directed in a second plane parallel to the

first axis and at a predetermined angle of inclination θ to the second axis for directing higher-order reflections of the light beam in different directions from the mirror.

6. A projection system as claimed in claim 1, wherein the projection system is provided with an angular beam separator positioned between the reflective polarizer (9) and the screen (35) for transmitting a predetermined order of reflection of the light beam.

7. A projection system as claimed in claim 6, wherein the angular beam separator is provided with a rectangular aperture having its long axis directed parallel to the first axis.

8. A projection system as claimed in claim 6, wherein the angular beam separator comprises a cylindrical lens and a diaphragm.

9. A projection system as claimed in claim 1, wherein the mirror (7), the quarter-wave plate (11) and the reflective polarizer (9) are flat, unstructured, optical elements.

10. A projection system as claimed in claim 1, wherein the quarter-wave plate (11) and the reflective polarizer (9) are integrated in a single optical element.

11. A projection system as claimed in claim 1, wherein the illumination system (3) comprises a semiconductor laser for generating a linearly polarized light beam.

12. A projection system as claimed in claim 1, wherein the mirror (7) is formed by a reflecting surface of a rotatable hexagon.

13. A projection system as claimed in claim 1, wherein the projection system comprises a modulating device (17) for modulating the polarized light beam.